COOKIA

Journal of the Wellington Shell Club, New Zealand
VOLUME 24, NOVEMBER 2012

BRACHIOPOD GENETICS

SEASHELLS OF WHANGARURU HARBOUR

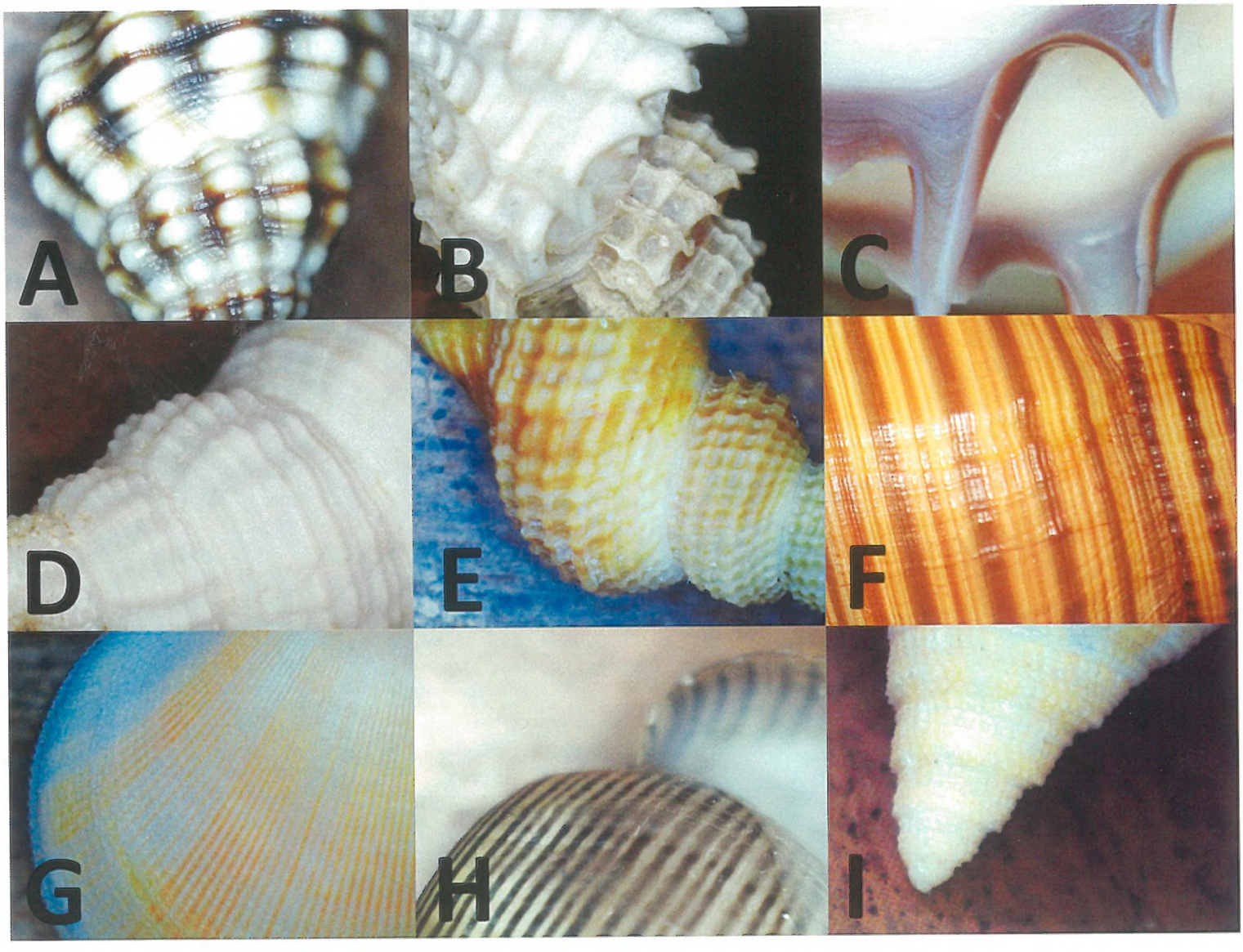
GOOD SHELL COLLECTING LOCATIONS

ARGONAUTA

LARGE LIMPETS AT KAIKOURA

MAHIA SHELL SAND

This year's competition



The challenge:

To identify these nine common-to-uncommon New Zealand seashells, preferably without using the hints below. Solutions on the next page.

The Hints:

A: Buccinulidae, 15mm. B: Muricidae, 21mm. C. Veneridae, 34mm. D: Fasciolariidae, 48mm. E: Capulidae, 15mm. F: Ranellidae, 74mm. G: Cardiidae, 26mm. H: Aplustridae, 49mm. I: Calliostomatidae, 63mm.

Photo on cover: *Cookia sulcata*, Jim Harding

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Our Club AGM is usually a lot of fun, but it is also the time when we elect our Club's officials. Many of the same people step up each time to help our Club continue successfully. We are grateful to them, but perhaps patterns of volunteering need to change. The generation best known as 'baby boomers' (aged about 55-64) has supplied many long term volunteers, NZ-wide. But increasingly they are staying in the work force, and looking after grandchildren. Younger Generation Y (aged about 20-35) tends to be different - many prefer to work independently, focus on time-limited projects so they are clear on commitment levels, or give money instead of their time.

We need to be innovative about engaging volunteers. Many roles can be shared and exchanged. Just as various members host our monthly meetings, or write a piece for *Cookia*, bundles of tasks traditionally done by committee members can be divided and shared. This can lighten the load on regular volunteers, and secure help from members who otherwise might be deterred by 'a big commitment'.

How might you contribute on a project-based, or recurring short term, or even one-off basis? With a garage sale or Shell Show, our website or a field trip, or a short talk at a meeting (when will our first talk be delivered via Skype?). Effective volunteering is full of feel good factor – get yours with us! Talk to a committee member soon ☺

A New Approach to an Old Enigma: The Case of the Brachiopod *Terebratella haurakiensis* versus *T. sanguinea*

by Elliot Dawson

Of the 40 or so species of brachiopods now known in New Zealand waters, undoubtedly the most spectacular is the large blood-red corrugated *Terebratella sanguinea* which was described as early as 1814 by William Efford Leach, then an assistant in the British Museum. A runner-up to it is *Calloria variegata*, described as recently as 1993 and so far found only in the far north, but allied to the duller little red-striped *Calloria inconspicua*, the common red toe-nail brachiopod often found washed up on rock shores as broken valves (Dawson 1995).

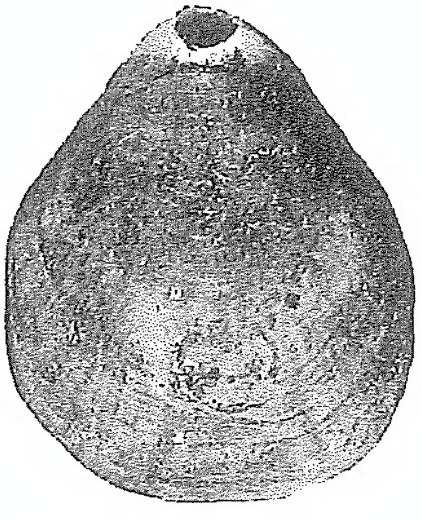
Leach called his shell the "blood-red Terebratula," hence appropriately named "*sanguinea*." The coloured figure on Plate 33, done by his artist, Richard P. Nodder, and from a dry specimen, shows this very well.

Leach noted also: "It seems to be a very rare species, a few specimens only having been received from New Zealand." Had Leach seen one of the glorious live specimens from Wellington Harbour he might well have been searching for an even more laudatory species name!

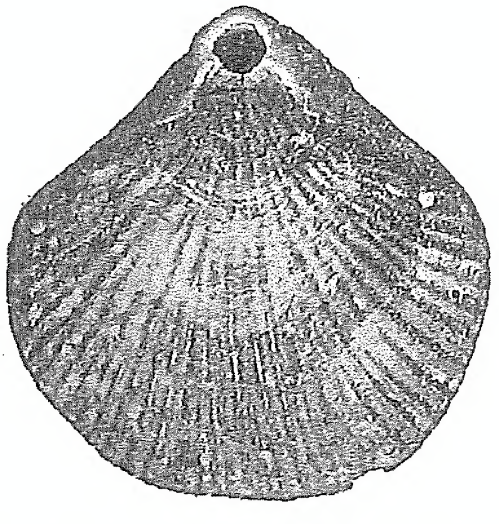
Terebratella sanguinea is common at Stewart Island and formed the subject of novel ecological and behavioural studies by Dr Joyce Richardson while she was working at the New Zealand Oceanographic Institute (Richardson 1981*a*, *b*). Particularly beautiful specimens, clean of epifaunal growth, occur in Wellington Harbour (Dawson 1998) and could provide a good local source for study.

In 1916, Dr J. Allan Thomson, the noted brachiopod specialist who became the Director of the Dominion Museum, recorded and illustrated a brachiopod dredged off Cape Colville, Hauraki Gulf, as "*Terebratella sanguinea* var." – remarking "As it is possibly only a local race of that species and may be linked to it by a series of intermediate forms, I do not propose to burden the literature with a new name, that may prove synonymous, until collections from other northern localities have dispelled the doubt." (Thomson 1916: 46).

However, in 1931, Dr R.S. Allan took a bolder step by describing a similar specimen also from off Cape Colville as a new species *Terebratella haurakiensis*. He noted that it had been collected by Mr A.W.B. Powell in 25 fathoms, attached to *Pinna zelandica* Gray, and was apparently "not uncommon."



Holotype of *T. haurakiensis*



T. sanguinea, Port Pegasus, Stewart Island

The original illustrations from Professor Allan's 1931 paper.

Allan distinguished the two species thus: "*T. haurakiensis* differs from *T. sanguinea* (Leach) in the following points: (1) Colour, being pale pink instead of blood-red; (2) shape, being elongate-oval instead of transversely ovate; (3) ornament, being comparatively smooth instead of strongly multicostate." [*i.e.* with many radiating ribs].

He noted further "*Terebratella haurakiensis* n. sp. is most closely related to *T. sanguinea* (Leach), which ranges as a Recent species from Cook Strait to Stewart Island, and occurs at the Auckland Islands. The two species are probably geographic variants, *T. haurakiensis* being a Cookian form, while *T. sanguinea* is Forsterian and Rossian. It will be of interest to trace the distribution of these species between Cook Strait and the Hauraki Gulf." [The terms Cookian, Forsterian, and Rossian refer to the "Marine Provinces" as proposed by Powell to explain the distribution patterns of marine molluscs (Powell, 1961) but now regarded as perhaps quasi-obsolete concepts (Dell 1962) - although Dell's challenge to take a more dynamic approach may well be overdue!].

Despite Thomson's hope that further collecting would reveal the true story of the relationship of his "variety" to the well-known *T. sanguinea*, the situation is little further advanced to-day, and the questions of distribution and identity and the possible causes thereof remain in need of answering.

Collections in Te Papa and NIWA indicate that any simple south to north distribution has been confused by the demonstration of the finding in 1962 and 1963, during New Zealand Oceanographic surveys of the Marlborough Sounds, of live populations of a brachiopod in Pelorus Sound which could not be distinguished from *Terebratella haurakiensis* (Estcourt 1967: 360 362, 368, 369).

Since that time equally problematic specimens have been collected at other localities (including Cissy Bay), most remarkably an odd shell found

Leach 1814: pl. XXXIII

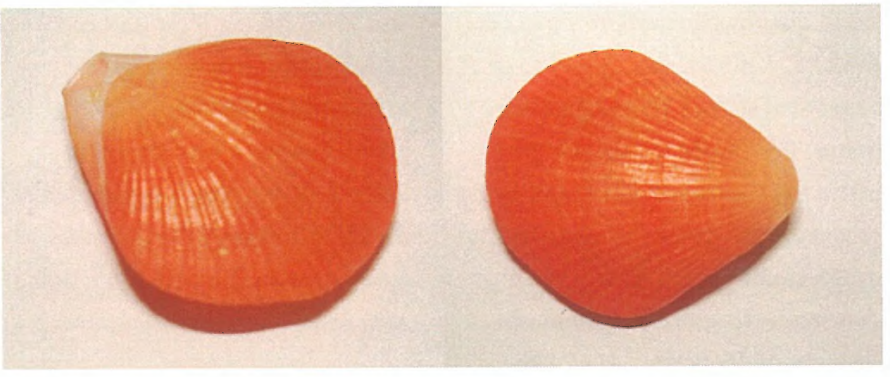
by Ian Townsend in 2011 washed up on Waikawa beach. The situation is further complicated by the fact that *T. haurakiensis* has been recorded as such from the Castlecliffian Te Piki Bed (Grant-Mackie & Chapman-Smith 1971: 657-658, fig. 4) thereby extending its range back to the Middle Pleistocene. On the other hand, *T. sanguinea* extends from the Early Pleistocene Nukumaruan (Dawson 1990: 40-41). Generally, however, *T. sanguinea* has been regarded as a southerner, common whereas *T. haurakiensis* is essentially its northern representative – this despite a relative paucity of specimens of the latter collected beyond the Hauraki Gulf.

However, a new tool has been applied to the study of identity, evolution and relationships of the Brachiopoda, many species of which exhibit the phenomenon of homeomorphy, whereby species with quite distinct evolutionary histories show a virtually indistinguishable external form (Cooper 1972). Application of the techniques of molecular biology in which DNA sequencing can be applied in parallel to the "old-fashioned" morphological descriptions is proving revolutionary in its outcome. It had additional value in determining the relative merits of morphological versus genetic characters for following brachiopod genealogies, as in the instance of some genera where adult shell characters were found to be not reliable indicators, *cf.* Lueter & Cohen 2002). Such a two-fold approach is now almost standard practice for brachiopod researchers world wide. Some of the wider problems of brachiopod biogeography and relationships, in particular, lend themselves to this approach (Cohen *et al.* 2011). In New Zealand, a start on knowledge of *T. sanguinea*, abundant and readily accessible in the southern fiords, has already been published (Ostrow *et al.* 2011). However, this is proceeding somewhat more slowly. Not only is funding for any such research limited and highly competitive between many similarly-worthwhile projects but, in the case of brachiopods in particular, we need to know much more about the basic biodiversity of faunal groups, distributions, population occurrences and sizes and so on.

A start has also been made to resolve the enigma of *Terebratella haurakiensis* by one of the pioneers of the sequencing approach, Dr Bernard

Cohen of Glasgow University (*cf.* Cohen 2001, Lueter & Cohen 2002), who is now able to report on his preliminary attempt to elucidate the doubts that Thomson had in 1916.

Shell collectors do not have to be molecular biologists but they can help to answer some of the basic questions of animal distributions by making well documented collections of brachiopods from both north and south and, whenever an accessible source of live specimens may be found, arranging with friendly museum curators to be able to preserve specimens for subsequent DNA analysis.



Specimen from Golden Bay, dredged 22 m

References

ALLAN, R.S. 1931: On a new Recent *Terebratella* from northern New Zealand. *The New Zealand Journal of Science and Technology* 12 (2): 385-397, figs 1-4.

COHEN, B.L. 2001: Brachiopod molecular phylogeny advances. Pp 121-128 (Chapter 13) in: Brunton, C.H.C. *et al.* (eds) *Brachiopods past and present*. London: Taylor & Francis (Systematic Assn. Special Vol. 63). Pp xiii + 1-441, illus.

COHEN, B.L. *et al.* 2011: Vicariance and convergence in Magellanic and New Zealand long-looped brachiopod clades (Para-Brachiopoda: Terebratelloidea). *Zoological Journal of the Linnean Society* 162 (7): 631-648.

LUETER, C.; COHEN, B.L. 2002: DNA evidence for speciation, paraphyly and a Mesozoic dispersal of cancellothyridid articulate brachiopods. *Marine Biology* 141: 65-74, fig.1 [note references pp 12-17].

COOPER, G.A. 1972: Homeomorphy in Recent deep-sea brachiopods. *Smithsonian Contributions to Paleobiology* 11: iv + 1-25, figs 1-5, pls 1-4.

DAWSON, E.W. 1990: The Cenozoic Brachiopoda of New Zealand: a commentary, reference list, and bibliography. *New Zealand Oceanographic Institute, Miscellaneous Publication* 103: 1-100.

DAWSON, E.W. 1995: A new name for the "Toe-nail" brachiopod (and a new species to watch out for). *Cookia, Journal of the Wellington Shell Club New Zealand* 7 (2): 31-32.

DAWSON, E.W. 1998: Lamp shells (Brachiopoda). P. 47 in *Te Whanganui a Tara Wellington Harbour. Review of scientific & technical studies of Wellington Harbour, New Zealand, to* Eastbourne: East Harbour Environmental Association. 200p, illus.

DELL, R.K. 1962: New Zealand marine provinces – do they exist? *Tuatara* 10 (1): 43-50.

ESTCOURT, I.N. 1967: Distributions and associations of benthic invertebrates in a sheltered water soft-bottom environment (Marlborough Sounds, NZ). *NZ Journal of Marine and Freshwater Research* 1 (3): 352-370, figs 1-4.

GRANT-MACKIE, J.A.; CHAPMAN-SMITH, M. 1971: Paleontological notes on the Castlecliffian Te Piki Bed, with descriptions of new molluscan taxa. *New Zealand Journal of Geology and Geophysics* 14 (4): 655-704, figs 1-8.

LEACH, W.E. 1814: *The Zoological Miscellany; being descriptions of new, interesting animals. Illustrated with coloured figures, drawn from nature, by R.P. Nodder, animal painter, and draftsman in natural history.* Vol. I. Pp 1-144, pls 1-60. London: E. Nodder & Son.

OSTROW, D.G. *et al.* 2001: Genetic differentiation of *Terebratella sanguinea* in the New Zealand fiords. Pp 150-162 (Chapter 17) in: Brunton, C.H.C. *et al.* (eds) *Brachiopods past and present*. London: Taylor & Francis (Systematic Association Special Volume 63). Pp xiii + 1-441, illus.

POWELL, A.W.B. 1961: New Zealand biotic provinces. *Tuatara* 9 (1): 1-8.

RICHARDSON, J.R. (comp.) 1981*a*: Recent brachiopods from New Zealand. Collected offprints of a suite of eleven papers published in the *New Zealand Journal of Zoology* 8 (2): 133-258.

RICHARDSON, J.R. 1981*b*: Brachiopods and pedicles. *Paleobiology* 7 (1): 87-95, figs 1-2.

THOMSON, J.A. 1916: Additions to the knowledge of the Recent and Tertiary Brachiopoda of New Zealand and Australia. *Transactions and Proceedings of the New Zealand Institute* 48: 41-47, pl. I.

Terebratella - molecular genetics

by Bernie Cohen

I will try to present an overview of the more potential than actual contributions of molecular genetic analysis to unravelling the evolutionary relationships of *Terebratella sanguinea* and *T. s. haurakiensis* (Allan 1931; Brook 1980; Richardson & Mineur 1981), the latter being treated provisionally as a subspecies. There will be no conclusive answer (a) because of the difficulty of answering the fundamental question "What is a species?" and (b) because proper molecular work has not been either funded or done.

The best answer to the species question would come from implementation of the Biological Species Concept, under which species are defined (briefly) as non-interbreeding populations. To implement a BSC definition would require the maintenance in aquaria of samples of the candidate populations and the rearing of their offspring and grand-offspring, i.e. proof of inter-fertility. Failure for some technical reason could not be distinguished from failure because of separate species status, so it is not a realistically applicable definition. The next best answer would come from molecular genetics, preferably by reading the sequences of highly variable (= fast-evolving) genes from multiple individuals of each potentially interbreeding group and clustering them by relatedness. If samples from different populations fall into only a single cluster (= clade) then either they belong to a single species (interbreeding group) or the method used was not sensitive enough to detect differences. If they fall into different clades then there is some differentiation between them and (especially) if this correlates with morphology they may be defined as different species. This corresponds to the widely adopted "DNA Barcoding" approach, but has not been implemented in *Terebratella*. Fast-evolving genes are needed because the time over which subspecies or species differentiate is at most one or a few million years and around 1% difference between population sequences is needed for the difference to be reliably measured.

All that *has* been done so far is to apply a similar approach at a higher taxonomic level using slowly-evolving gene sequences, i.e. to compare *T. dorsata* from Patagonia with *T. sanguinea* from New Zealand. In these slowly-changing sequences a few per cent divergence accumulates in perhaps tens or a hundred million years, yielding an analysis sensitive enough to show that these species diverged around 80 – 100 MYa, when NZ and Antarctica parted company; in fact *T. dorsata* and *T. sanguinea* belong to quite different clades; the relatives of *T. dorsata* are all Magellanic/Antarctic forms, whereas those of *T. sanguinea* are all NZ/West Pacific forms (Cohen et al. 2011). The NZ *Terebratella* is therefore due to be renamed, probably by reviving the genus name *Magasella* for it.

What about non-molecular studies? Too little has been done. Aldridge (1981) examined crude morphology (L x W; L x D) in *T. sanguinea* from several NZ locations and found geography-related ratios, animals being more ribbed and alate to the south and west and rounder, possibly smoother and paler coloured to the north and east. Is *T. haurakiensis* just a continuation of this trend, i.e. does it belong in a cline or gradient? Neither Thomson (Thomson 1916) nor Allan (Allan 1931), who originally described this form, provided any detailed morphometric analysis. During 1990 I arranged for a number of SCUBA collections around NZ. Among collections made by Dept. of Conservation member Clinton Duffy were two from the Marlborough Sounds (Admiralty Bay, Tobacco Pt., 60-70 ft and Queen Charlotte Sound, point between Titirangi & Hikoekoea bays, Guards Bay, 70-80 ft.) that yielded samples whose crude morphology and colour appeared to range from fairly typical for north-eastern *T. sanguinea* to something much smoother and paler, more like "typical" *T. haurakiensis* (the remaining shells in alcohol are deposited in the Hunterian Museum, University of Glasgow). These reinforced the idea that *T. haurakiensis* might be just one end of a cline. I also borrowed two old

samples of the latter from NIWA for comparison and DNA extraction. Unfortunately, for want of funding and time none of these animals' DNAs have received adequate attention and I suspect that most of the DNAs are now too degraded to be useful. Only one small study was completed (by a project student), using a version of an RAPD methodology which could never be highly conclusive and which found insufficient evidence that *T. sanguinea* and *T. haurakiensis* are genetically more distinct than sub-populations of one species. I have also had one recently collected specimen of "typical" *T. haurakiensis* from NIWA, from which I did obtain usable DNA, but its receipt coincided with having to close my lab and again nothing useful has been done with it.

In summary, I regret to say that the answer to any question about the status of *T. haurakiensis* as a "good" species is "a lemon". Probably not, but conclusive data do not exist.

References

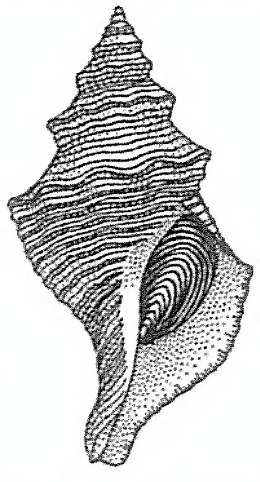
ALDRIDGE, A.E. 1981 Intraspecific variation of shape and size in subtidal populations of two Recent New Zealand articulate brachiopods. *New Zealand Journal of Zoology* 8, 169-174.

ALLAN, R.S. 1931 On a new Recent *Terebratella* from northern New Zealand. *New Zealand Journal of Science and Technology* 12, 385-387.

COHEN, B.L., BITNER, M.A., HARPER, E.M., LEE, D.E., MUTSCHKE, E. & SELLANES, J. 2011 Vicariance and convergence in Magellanic and New Zealand long-looped brachiopod clades (Pan-Brachiopoda: Terebratelloidea) *Zoological Journal of the Linnean Society* 162, 631-645.

RICHARDSON, J.R. & MINEUR, R.J. 1981 Differentiation of species of *Terebratella* (Brachiopoda: Terebratellinae). *New Zealand Journal of Zoology* 8, 164-167.

THOMSON, J.A. 1916 Additions to the knowledge of brachiopoda. *Transactions of the New Zealand Institute* 48, 41-47.



New Zealand Shell Show 2013

Friday 3rd May 2013 - Sunday, 5th May 2013

Te Tuhi Centre for the Arts, 13 Reeves Road, Pakuranga, Auckland, New Zealand

Auckland Shell Club invites exhibitors, dealers, and participants to New Zealand's premier shelling event of the year. A full schedule will be published by November 2012. Please register your interest to petermwp@gmail.com (or Ph. +6498171397) to be put on the mailing list.

Auckland Shell Club - http://nz_seashells.tripod.com

Award of D.Sc. to Bruce Marshall

Wellington Shell Club would like to record the award, by Victoria University of Wellington in May 2012, of the degree of Doctor of Science to Bruce Marshall. This very significant honour is in recognition of Bruce's contribution to science across his whole career. That contribution really has been huge – Bruce was described to the University as "the leading authority on the taxonomy and systematics of living molluscs in New Zealand" who has "significantly enhanced our understanding of the diversity, systematics and biogeography of the malacofauna of the south-west Pacific" and whose research is "pioneering".

It is notable that A.W.B Powell and R.K Dell were both awarded this degree – Bruce has joined an elite molluscan team. Our warmest congratulations to Bruce and, not for the first time, our thanks for his longstanding support for our club.

Aulacomya maoriana
(Iredale, 1915)

A collector's comment on a common thing

Kerry Walton

Collecting from low-tide rocks in the Seaview Marina, Wellington Harbour, 2008

Here also can be found impressive specimens of *Coelotrochus tiaratus*, *Cominella adspersa* and maybe a *Kellia cycladiformis*

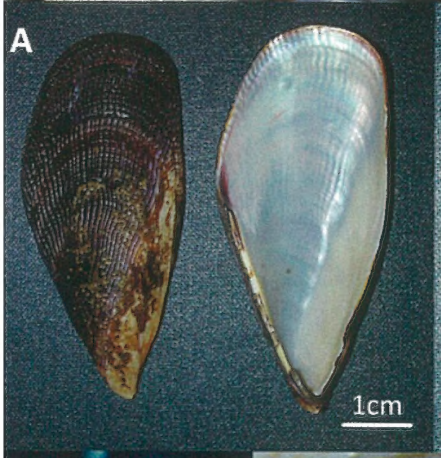
I have been collecting shells now for 14 years and a member of the Wellington Shell Club for 12. As a result, it is now quite uncommon for me to find a shell on a local beach that I do not already have.

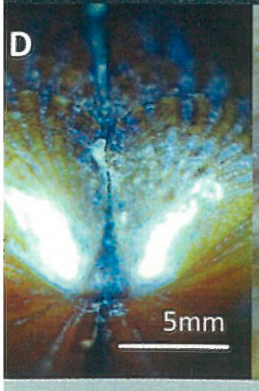
I was not therefore expecting to come home from the Eastbourne field-trip with any great treasures and considered my find of the day to be a rather nice *Aulacomya maoriana* which had naturally had its periostracum removed.

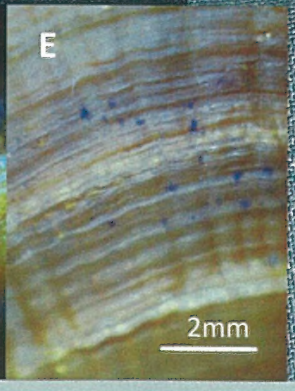
With a touch of baby oil the colours came up brilliantly but the real surprise came when I went to add it to my collection database and realised that I didn't already have one! This was a shell so common that I had never thought to pick them up before.

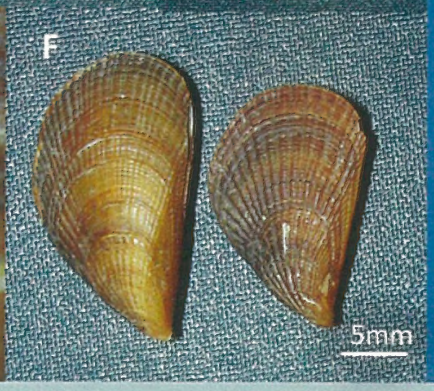
My New Zealand Mytilidae collection now looks a lot better with four lots of *A. maoriana* acquired throughout the year but it made me wonder what other common species have slipped under my collecting radar.

Map below: edited from source: Museum of New Zealand, Te Papa Tongarewa (2012) *Aulacomya maoriana*, accessed online at http://collections.tepapa.govt.nz/taxon.aspx?irn=11021









Map (right) showing records of *Aulacomya maoriana* (Iredale, 1915) from the Te Papa collection in red and dots in green representing those shells figured from my own collection. A: 6m SCUBA midway along Bradshaw Sound, Fiordland, 90mm, MS156. B: Beached Eastbourne Beach, Wellington Harbour, 66mm, MS1163. C: Beached, Paraparaumu Beach, Kapiti Coast, 78mm, MS244. D, E & F: Under low-tide rocks in the Seaview Marina, Wellington Harbour, 33mm (D, E & F left) & 27mm (F right), MS984.

How to Spot a *Trivia merces*

by Fred and Lesley Keil

For quite a long time, rock and mineral collection was one of my interests, and during this period an ultra violet (black light) lamp was used to show off some of the many minerals that responded to this type of radiation. As some types of calcium carbonate are known to react, it was not long before an experiment occurred using the shell collection and a little UV torch given to me by a friend. My first notion was that this could be another way to identify some shells.

The start was not particularly successful, but a couple of overseas shells gave some interesting results. The first was an unidentified brown oyster shell that had been languishing in a bowl, unwanted and unloved. However, under the light it turned from an ugly duckling into a beautiful swan, with four red spots along its leading edge. Next came a *Bulla ampulla* (bubble shell). This one showed the same red colour, but this time it was an overall colour.

Now for the *Trivia merces*. In the last year or so we have been able to collect a handful of these delightful little shells, and small as they may be, they are still one of my favourites. These shells moved further up the 'my favourite' scale by turning their brown spots into bright pink under ultra violet light. In the same family is an overseas *Trivia* species by the name of *T. monacha*. It too shows pink fluorescence.

It appears that shells with a certain brown colouration react to the light, but with the majority of the collection there was no reaction at all.

The next step, and my advice, is to arm yourself with a good strong UV torch and head to the nearest beach where these little critters can be found, pick a dark night and fill your pockets with Trivia, so to speak.

Good hunting!

Seashells of Whangaruru Harbour

by Kerry Walton

Whangaruru Harbour is a serene body of water filled with private little coves and beaches covering perhaps 12 square kilometres. It is situated midway between the numerous marinas of the Tutukaka/Whangarei Coast and the boatie's paradise that is the Bay of Islands and is fairly unremarkable, often overlooked as being little more than safe anchorage for anyone passing along that undeniably rugged section of open coastline.

On a shell collector's map it features not at all except maybe as a means of helping one to find the nearby Bland Bay, which is well known as a collecting hot-spot; something Whangaruru Harbour is not. Indeed, very little of any interest can be found on the shore at all except for the odd *Daphnella cancellata* along the eastern beaches and, I am told, *Psilaxis radiata* from Oakura. The material that came up in the dredge was a lot more interesting to pore over but contained none of the large uncommon or rare species that one dreams to find when planning a trip northwards.

The upper part of the harbour (green in Fig 1B) is extremely shallow with a maximum water depth in the channels of about 3 m. This part of the harbour is a typical estuarine environment, pleasingly undisturbed and unpolluted, and fringed, in most of the coves, by mangroves. The bottom is a thick grey mud containing little life but a few empty shells, namely numerous single valves of the introduced *Theora lubrica*, which I was surprised not to find live given the number of empty shells. A couple of large fragments of *Struthiolaria papulosa* and a single live *Pelicaria vermis* were found as well as single valves of *Tellinota edgari* and *Zenatia acinaces*. A few live *Philine auriformis* were found in each shallow-water dredge sample from a muddy bottom, the little white slugs crawling vigorously around the sorting buckets.

The intertidal mudflats are dominated by *Austrovenus stutchburyi*, *Paphies australis*, *Amphibola crenata* and *Cominella glandiformis*. At the shore's edge were beds of oysters on which crawled *Diloma aethiops* and attached to the same rocks, *Limnoperna securis*. I saw no sign of the recently introduced *Nassarius burchardi*, which seems to prefer a slightly muddy estuarine habitat such as this.

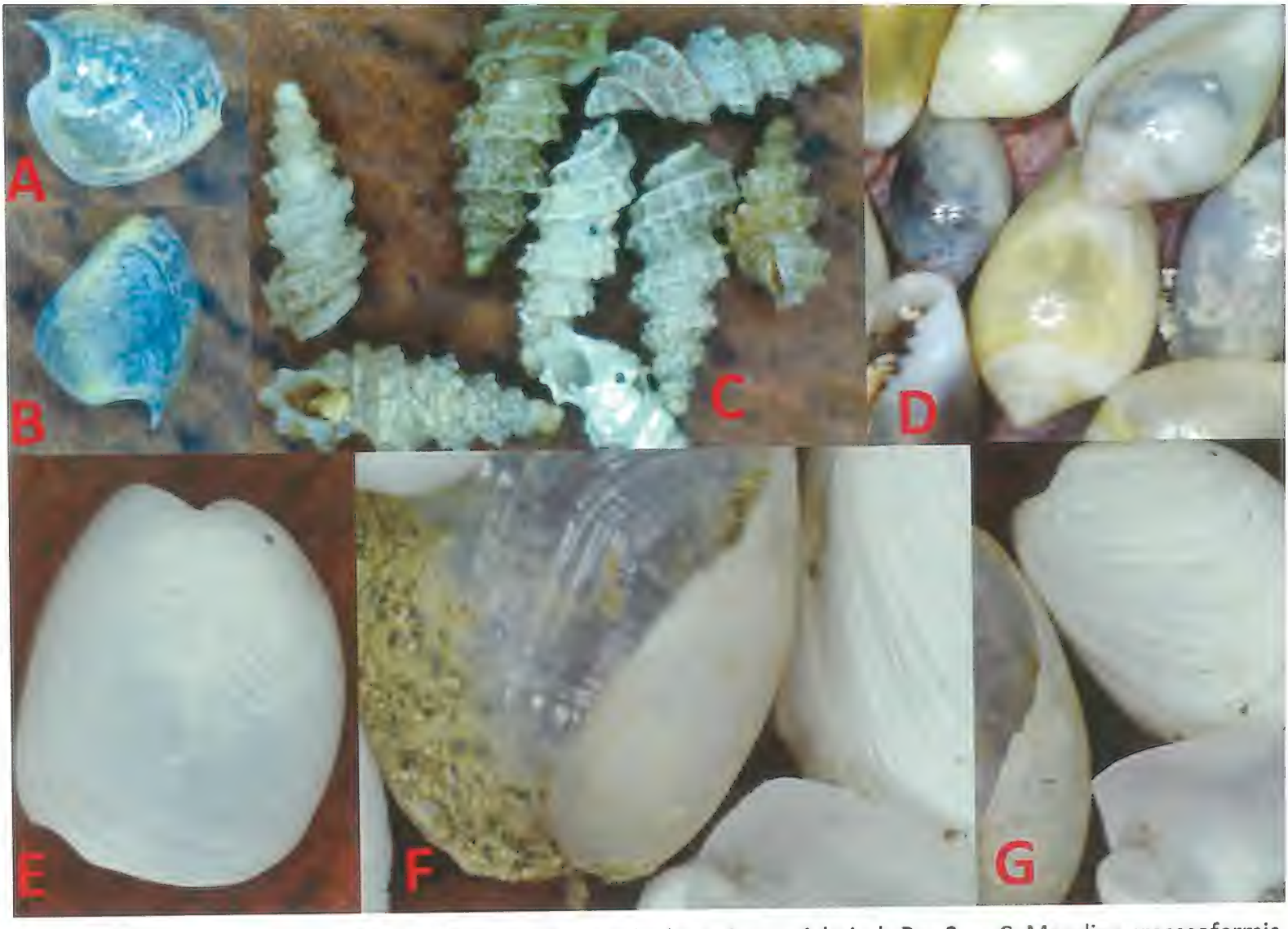
As you move down the eastern side of the harbour (red in Fig 1B) in the 2-5 m range, the bottom becomes progressively more sandy and rich with shell matter and living material. *Linucula* sp., *Mesoginella koma*, *Rissoina chathamensis*, *R. fucosa*, *Xymene plebeius* and *Cominella quoyana* are all plentiful live with a few specimens of the less-common *Munditia tryphenensis*, *Merelina crosseaformis*, *Melanochlamys cylindrica* and *Daphnella cancellata* appearing as well.

Nearing the harbour entrance on the eastern coast (orange in Fig 1B) the bottom becomes gradually gravelly before at last becoming completely rocky around Motutara (Henry) Island. The shell fauna remains much the same with the addition of the listed Chiton species *Rhyssoplax stangeri* and *Ischnochiton granulifer* appearing attached to pebbles, shell and the green sea lettuce *Ulva* sp.

Looking north from Ohawhini (near Oakura).

Photo credit: The Telegraph, UK

The rocky bottom of the harbour entrance (grey in Fig 1B) was unsampled on this trip as the dredge would snag on each drop and return empty. We were unable to find a sandy channel to dredge in where you might hope to find such nice things as *Taron albocostatus* and *Murexul mariae*. As the depths in this part of the harbour ranged from 0-20 m, a



A & B: Melanochlamys cylindrica, 3 mm, Admirals Bay 3 m. C: Merelina crosseaformis, 3 mm, Admirals Bay 3 m. D: Mesoginella koma, 4 mm, Admirals Bay 3 m. E, F & G: Philine auriformis, 5-6 mm, off Motukauri Island 3 m.

Fig 1. A.

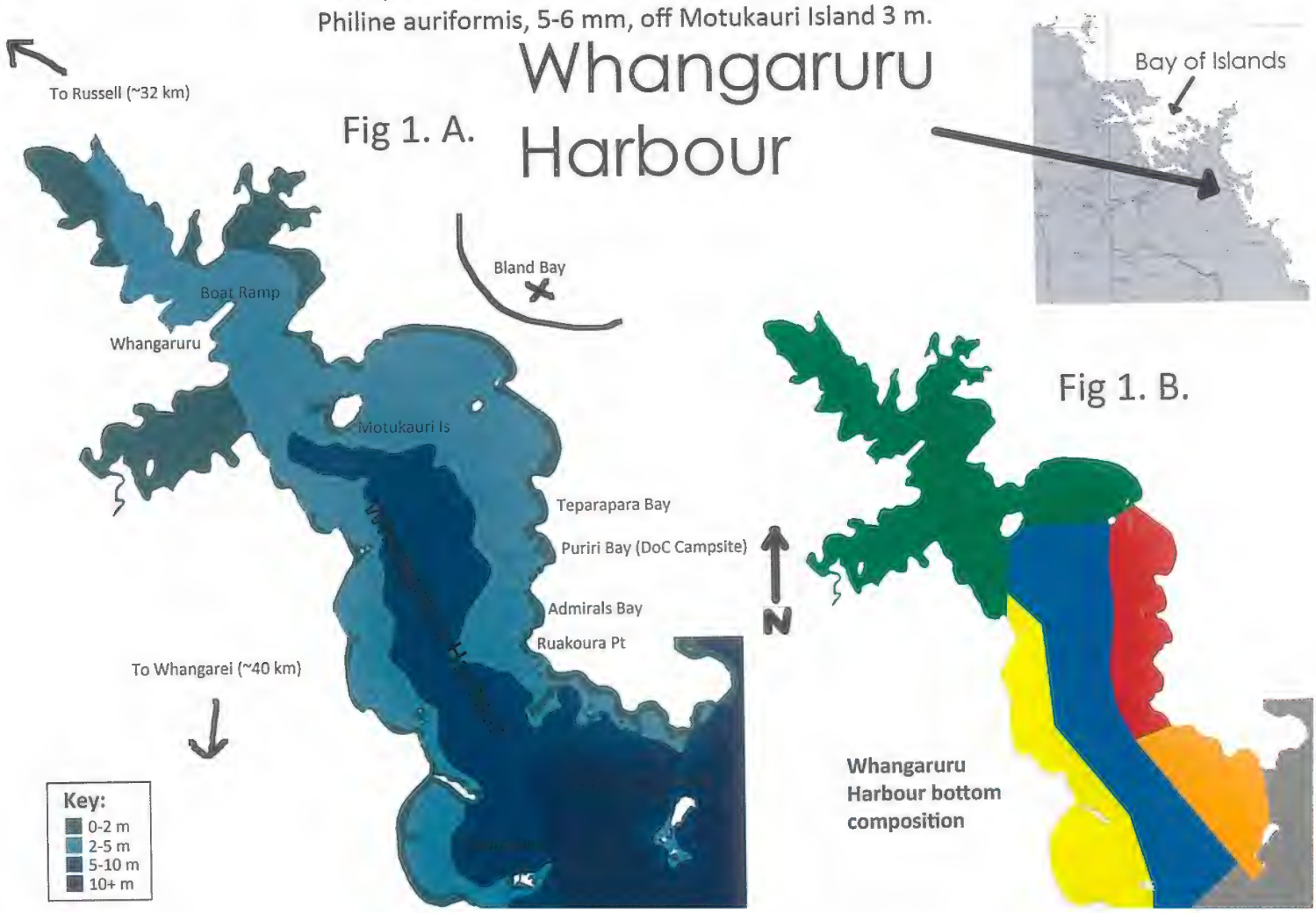


Fig 1. B.

SCUBA diver would be likely able to add a number of coastal rock-dwelling species to the checklist below from this part of the harbour. The rocky bottom extended at least as far out as the 35 m isobath.

Travelling down the western part of the harbour as far as Oakura Bay (yellow in Fig 1B), the bottom also becomes progressively composed of fine golden sand becoming fully sandy around Motukowhai Island and southwards. Here though, the small species from the eastern side of the harbour were entirely absent, instead the composition being dominated by *Tawera spissa* with numerous specimens of *Cominella adspersa*, *Stiracolpus pagoda* and *Cominella quoyana* and the occasional *Amalda* species or *Antisolarium egenum* making an appearance. This trend continued right down the coastline at 3-20 m as far as sampling went beyond the harbour limits at Mokau Bay.

The central channel of the harbour (blue in Fig 1B) reached depths of about 9-10 m near the harbour entrance with an average depth of maybe 6-7 m. This channel has a mud bottom rich in Molluscan life with *Pratulum pulchellum* living very densely (~8 per dredge haul in the 0.4 m wide dredge towed over 50 m) among *Cominella quoyana* and the occasional *Maoricolpus roseus*. The large (~16 mm) whitish-orange *Leptochiton inquinatus* was living attached to shell material. This mudded channel appeared to be replaced by a rocky bottom in the eastern half of the harbour entrance and became a fine golden sand as described above in the western half.

Shore collecting, the upper reaches of the harbour were as described above (intertidal mudflats). The western parts had little but worn valves of the common bivalve species, *Tawera spissa*, *Paphies australis*, *P. subtriangulata* and *Tucetona laticostata*. The eastern side had much more to see but it was far from exciting material. A total of five *Daphnella cancellata* were found on Teparapara Bay and Admirals Bay along with a nice *Epitonuim tenellum* and *Amalda northlandica*. The absence of turnable rocks meant that finding the source of the *Cominella* specimens and *Daphnella cancellata* that were washing ashore was difficult and would require snorkelling or SCUBA gear. With a more thorough search of the rocky environments it is likely that such rarities as *Sassia parkinsonia*, *Mitra carbonaria*, *Volutomitra obscura* and *Monoplex exaratus*, all species common (as damaged shells) just around Cape Home at Kouru Point, less than two kilometres away would be found in the harbour entrance itself.

As a shell collector I cannot say that I will be returning when the potential treasure trove that is Bland Bay is but a stone's throw away, but with enough time on my hands I might pop over to Admirals Bay to have a look for more *Daphnella cancellata* which I happen to quite like and this is something I recommend you do as well if you're going past that way. If you have a boat and a dredge I would strongly recommend launching instead in Bland Bay where the dredging is immensely better, particularly close to shore at the south-eastern side of the bay off the main beach where you can actually find some of the large, attractive and uncommon species that you were really after. Despite saying that, it is better still if you try somewhere new altogether: somewhere unsampled; and that way you can add to our collective shelling knowledge and **who knows** what you will find!

Inside our home for the fortnight, SV Vrede

Checklist of Molluscan Species from Whangaruru Harbour:

A note for future work on this region: Over the months of January and February 2012, I successfully dredged at 15 stations and collected from the shore at 9 localities within the Whangaruru Harbour noting 135 species of mollusc. Near all of the dredged material has been gifted to the Museum of New Zealand Te Papa Tongarewa (Te Papa) including at least one specimen of all species collected. Not all species seen during this period were collected: this applies mostly to the species seen only as beach-worn specimens of common species such as *Lunella smaragdus*. These were, none the less, noted for the making of this checklist. Much of the live material collected is preserved in 98% ethanol so that it can be used for DNA sequencing. Pelagic or free-swimming groups such as Janthinidae and Cephalopoda were not recorded in my sampling although it is likely that such species occur in the harbour. Also not recorded below is an existing record of *Psilaxis radiata* although I note it here.

I wish to acknowledge the considerable contribution made by Bruce Marshall from Te Papa, for his assistance in the identification of most of the species listed here. It is appreciated!

Notation:
C: 'common in my sampling, more than five specimens found'
UC: 'uncommon in my sampling, three to five specimens found'
R: 'rare in my sampling, one or two specimens found only'
L: one or more specimen(s) were found live
M: found at multiple stations including beach-collect sites.

GASTROPODA (77 species):

Aglajidae:
Melanochlamys cylindrica, R

Amphibolidae:
Amphibola crenata, C, L, M

Anabathridae:
Amphithalamus falsestea, C, L, M
Pisinna zosterophila, C, L, M

Batillariidae:
Zeacumantus lutulentus, UC, L, M
Zeacumantus subcarinatus, C, L, M

Buccinulidae:
Buccinulum pallidum powelli, R
Buccinulum vittatum, UC
Cominella adspersa, C, L, M
Cominella glandiformis, C, L, M
Cominella maculosa, C, L, M
Cominella quoyana, C, L, M
Cominella virgata, C, M
Penion sulcatus, UC, M

Bullidae:
Bulla quoyii, C, M

Caecidae:
Caecum digitalum, UC

Calyptraeidae:
Maoricrypta costata, UC, L, M
Sigapatella novaezelandiae, UC
Sigapatella tenuis, C, L, M

Capulidae:
Trichosirius inornatus, UC, L, M

Cingulopsidae:
Eatonina micans, UC

Costellariidae:
Austromitra rubiginosa, UC, M

Eatoniellidae:
Eatoniella limbata, C, L, M

Elachisinidae:
Dolicrossea vesca, UC

Epitoniidae:
Epitonium minora, UC, L, M
Epitonium tenellum, R

Fasciolariidae:
Taron dubius, C, M

Fissurellidae:
Tugali elegans, R

Iravadiidae:
Nozeba emarginata, C, M

Liotiidae:
Munditia tryphenensis, UC

Littorinidae:
Austrolittorina antipodum, C, L
Austrolittorina cincta, UC
Risellopsis varia, UC

Lottiidae:
Asteracmea suteri, C, M
Notoacmea subtilis, C, L, M

Mangeliidae:
Neoguraleus tenebrosus, UC, L, M
Neoguraleus sp., C, L, M
Neoguraleus sp., R

Marginellidae:
Mesoginella koma, C, L, M

Muricidae:
Axymene traversi, UC, L, M
Dicathais orbita, R
Haustrum haustorium, R, L
Haustrum scobina, C, L, M
Xymene plebeius, C, L, M
Zeatrophon ambiguus, R, L

Neritidae:
Nerita melanotragus, C, L, M

Olividae:
Amalda australis, R
Amalda northlandica, UC, L, M
Amalda novaezelandiae, UC, M

Philinidae:
Philine auriformis, C, L, M

Pyramidellidae:
Eulimella sp., R
Gumina dolichostoma, UC
Odostomia vaga, R
Odostomia sp., UC, M
Turbonilla sp., C, M

Ranellidae:
Cabestana spengleri, R

Raphitomidae:
Daphnella cancellata, C, M

Rissoidae:
Rissoina anguina, R
Rissoina chathamensis, C, L, M
Rissoina fucosa, C, L
Merelina crosseaformis, C, L
Merelina taupoensis, R

Turbinidae:
Lodderena nana, R

Struthiolariidae:
Struthiolaria papulosa, R
Pelicaria vermis, R, L

Terebridae:
Pervicacia tristis, C, L, M

Trochidae:
Antisolarium egenum, C, L, M
Cantharidus dilatatus, R
Cantharidus purpureus, UC, L, M
Cantharidus rufozona, UC, L
Coelotrochus tiaratus, R
Coelotrochus viridis, R
Diloma aethiops, UC, L, M
Zethalia zelandica, UC

Turbinidae:
Lunella smaragdus, UC, L, M

Turritellidae:
Maoricolpus roseus, C, L, M
Stiracolpus pagoda, C, L, M

BIVALVIA (51 species):

Arcidae:
Acar sociella, UC
Barbatia novaezelandiae, R

Carditidae:
Cardita distorta, UC
Pleuromeris zelandica, C, L, M
Purpurocardia purpurata, C, L, M

Condylocardiidae:
Condylocuna sp., R

Corbulidae:
Corbula zelandica, C, L, M

Cardiidae:
Pratulum pulchellum, C, L, M

Galeommatidae:
Scintillona zelandica, C, M

Glycymerididae:
Glycymeris modesta, R, L
Tucetona laticostata, R

Hiatellidae:
Hiatella sp., UC, L, M

Lasaeidae:
Arthritica bifurca, C, L, M
Arthritica sp., C, M
Melliteryx sp., C, M

Limidae:
Divarilima sp., UC

Mactridae:
Scalpomactra scalpellum, UC, L, M
Maorimactra ordinaria, UC, M
Zenatia acinaces, UC, M

Mesodesmatiidae:
Paphies australis, C, L, M
Paphies subtriangulata, C, M

Montacutidae:
Mysella tellinula, R

Myochamidae:
Myadora boltoni, UC, L
Myadora striata, C, L, M
Myadora subrostrata, R

Mytilidae:
Limnoperna securis, C, L, M
Musculista senhousia, R
Musculus impactus, UC

Nuculidae:
Linucula sp., C, L, M
Nucula nitidula, C, L, M

Ostraeidae:
Saccostraea glomerata?, C, L, M

Pectinidae:
Talochlamys zelandiae, R, L, M
Pecten novaezelandiae, R

Psammobiidae:
Gari lineolata, C, L, M
Gari stangeri, C, M

Semelidae:
Leptomya retiaria, UC, M
Theora lubrica, C, M

Tellinidae:
Macomona liliana, C, M
Moerella huttoni, R
Serratina charlottae, R
Tellinota edgari, UC, M

Thraciidae:
Trigonothracia mimica, R

Ungulinidae:
Diplodonta striatula, C, M
Diplodonta zelandica, C, L, M

Veneridae:
Austrovenus stutchburyi, C, L, M
Circomphalus yatei, R
Dosina mactracea, UC, L, M
Dosinia greyi, R
Dosinia lambata, C, L, M
Irus elegans, UC
Ruditapes largillierti, C, M
Tawera spissa, C, L, M

POLYPLACOPHORA (6 species):

Callochitonidae:
Eudoxochiton nobilis, R

Chitonidae:
Chiton glaucus, R, L
Chiton pelliserpentis, UC, L
Rhyssoplax stangeri, C, L, M

Ischnochitonidae:
Ischnochiton granulifer, R, L

Leptochitonidae:
Leptochiton inquinatus, C, L, M

SCAPHOPODA (1 species):

Gadilidae:
Cadulus teliger, R

Notes on NZ Collected Species

Lunella smaragdus

(Gmelin, 1791)

Two specimens from Wellington's south coast rockpools.

These are particularly noteworthy as they bring the number of known examples of sinistral *Lunella smaragdus* to five, which is quite remarkable really!

KERRY WALTON

Nepotilla nitidula Powell, 1940

Nepotilla nitidula is an endemic shell which is occasionally found in the far north of New Zealand. This specimen of measuring about 3mm in height was found by Ann Frengley in shell sand from the northern coastline of Mahia Peninsula in mid April 2010, and it is an addition to the extensive list of shells now found at Mahia.

Trichosirius inornatus (Hutton, 1873)

This fossil shell, found on a beach in Tory Channel in the 1970s, measures 18.4 mm tall x 18.7mm. It compares well with the record size specimen held by the National Museum of New Zealand Te Papa Tongarewa which is 22 mm.

FRED KEIL

Some nice finds in Tasman Bay

Several years ago now I struck it lucky whilst diving in 8-10 m for scallops at the mouth of Falls River off Abel Tasman National Park. My killer find however was *Philine angasi* and quite a number at that. I would have seen as many as 30 dead specimens, killed perhaps by too much fresh-water from recent flooding. The area is only 200 m from where the river meets the sea. A dive a few weeks later failed to find any dead specimens but, by checking some of the trails in the clean, course sand, I managed to find two live specimens. They were a large white animal as big as the largest *Scutus* with their shells semi-covered by fleshy lobes. Whilst cleaning these out I kept the 'chompers', the fish-bone shaped objects in the photo, and the small sand-dollar which somehow fell out of the mix. I wonder if it was on the menu. *Philine* are carnivorous, living from low-tidal sands down to extremely deep water on sand and mud (Powell, 1979). New Zealand has five species recorded on the checklist and a number undescribed (Spencer et. al., 2006; Spencer et. al., 2000).

Over Christmas 2011 whilst diving for scallops in Croisilles Harbour I was lucky enough to find a (dead) specimen of *Coluzea spiralis*. I had dredged these before in 37 m in the middle of Tasman Bay but I hadn't expected to find a specimen in a mere 4 m on clean sand. The specimen was hermit-crabbed but still a considerable distance from the deep-water in which they live. The species has a "confirmed bathymetric range of 32-274 m" (Harasewych, 2011).

MIKE YOUNG

References:

HARASEWYCH, M.G. 2011. The Living Columbariinae (Gastropoda: Neogastropoda: Turbinellidae) of New Zealand. *Zootaxa* 2744: 1-33.

POWELL, A.W.B. 1979. New Zealand Mollusca, marine, land and fresh-water shells. xiv + 500 pp., pls. 1-82. Collins.

SPENCER, H.G., MARSHALL, B.A., MAXWELL, P.A., GRANT-MACKIE, J.A., STILWELL, J.D., WILLAN, R.C., CAMPBELL, H.J., CRAMPTON, J.S., HENDERSON, R.A., BRADSHAW, M.A. , WATERHOUSE, J.B. & POJETA Jr, J. 2009. New Zealand Inventory of Biodiversity pt. 10: Phylum Mollusca, chitons, clams, tusk shells, snails, squids and kin. pp. 161-254. Canterbury University Press.

SPENCER, H.G., WILLAN, R.C., MARSHALL, B.A. & MURRAY, T.J. 2011. Checklist of the Recent Mollusca recorded from the New Zealand Exclusive Economic Zone. www.molluscs.otago.ac.nz/index.html (August 2012)

A Freak *Panopea zelandica* from Ohope Beach

Last year, in April 2011 during our club field trip to the East Coast of the North Island, we visited Ohope Beach. On the first morning I found a few shells of *Panopea zelandica* (Quoy & Gaimard, 1835) including an unusually formed one (Figures A & B) on the high water line.

This unusual *Panopea* shell was smaller in size than the other ones I found: ht: 62 mm, w: 80 mm, th: 16 mm. The top of this shell was sloping to both the left and right sides (Figure A). The outside of the shell (Figure B) was somewhat impressed. The big difference from a normal *Panopea zelandica* from Rabbit Island near Nelson (Figure C) is the nearly straight line along the top of the shell. This specimen measures ht: 63 mm, w: 110 mm, th: 23 mm.

The shell I found at Ohope Beach was looking fresh and not damaged. NZ has two *Panopea* species: *P. zelandica* (Quoy & Gaimard, 1835) and *P. smithae* Powell, 1950 belonging to the family Hiatellidae. Both types are living around NZ; *P. smithae* lives in deeper water than *P. zelandica. Panopea* species can vary greatly in form. The unusual shell in Figures A and B looks disturbed in growth.

There are many reasons why shells can develop different or even freak forms. Genetic changes, illnesses, predators, parasites and substrate can influence their forms. These shells live about 45 cm deep in the sand, where it is normally inaccessible for predation. Their siphons are just outside the sand. It is possible that this *P. zelandica* from Ohope Beach has been attacked by crabs or flatfish in an early stage of growth, resulting in its freak form.

BERT VAN TIGGELE

Figure A: Freak *P. zelandica*—inside

Figure C: Usual form of *P. zelandica*

Figure B: Freak *P. zelandica*—outside

References

CADEE, G.C. July 1999. Many malformed mactras washed ashore at Texel (The Netherlands). Newsletter of the Netherlands Malacological Society no. 309.

MORTON, J & MILLER, M. 1968. The New Zealand Sea Shore. Collins

POWELL, A.W.B. 1979. New Zealand Mollusca: Marine, land and freshwater shells. Collins.

RAVEN, J & BRACEGIRDLE, S. 2010. New Zealand Seashells Visual Guide. Creatus Design.

Penion cuvierianus jeakingsi

(Powell, 1947)

Waikanae Beach, March 2012

KRIS WOODS

Phenatoma rosea

(Quoy & Gaimard, 1833)

I first collected two specimens of this shell from sandy material retrieved in 1974 from the wreck of the interisland ferry "Wahine" which was then on Taranaki Street Wharf. The larger (26 mm long) immediately stood out from the other small specimens. The smaller of the two had a hole drilled by a carnivorous mollusc but otherwise both were in good condition. The colour, however, had faded from its normal pale pink (Powell, 1979) to cream with only a hint of purple in the aperture.

Later on I acquired another 3 specimens collected at Pakawai Beach near Collingwood, South Island. These have more of a hint of pink but are still a creamy-yellowish colour. I have been to Pakawai a number of times and spent nearly a week there in 2008 but have never come across any. My last specimen at 29.5 mm is average for the species and was collected from wash-ups at Opoutama Beach, Mahia Peninsula in 1981. In all the years between, I have not come across any more of this species in my collecting excursions although its distribution is through the North, South and Chatham Islands from low water to 50 fathoms.

MARY AGNES WOTTON

Reference

POWELL, A.W.B. 1979. New Zealand Mollusca, marine, land and fresh-water shells. Collins.

Ischnochiton luteoroseus Suter, 1907

On a dredging trip to Croisilles Harbour, Nelson with Mike Young, on 30 December 2011, chitons were the target groups. One small specimen of something quite different was recovered living on the interior of an empty valve of the glycymerid bivalve, *Tucetona laticostata* (Quoy & Gaimard, 1835). Initially unidentified, it was thanks to Bruno Anseeuw of Belgium that attention turned to *Ischnochiton luteoroseus* Suter, 1907. So it turned out to be.

I. luteoroseus, a New Zealand species, is recorded as a southern representative of the genus, with the most northern published record, on the west coast of the South Island, being Dusky Sound, S side of Wet Jacket Arm entrance, 45°40.0'S; and on the east coast, being off Otago Peninsula at 45°36.55'S. Both were subtidal: the former 15 m and the latter 41-59 m (Anseeuw et. al. 2009:148).

The Croisilles Harbour record was at 41°02' 57.27"S, 173°40' 40.08"E, in 26-28 m. The specimen, here illustrated, measures 6.3 mm in length x 3.8 mm in width. This record indicates a significant northerly range extension from that previously recorded. In all other aspects, such as habitat depth, specimen sizes, and attachment object, it is consistent with published material. The specimen is presently in my collection (lot #14,647).

PETE CRESSWELL

Reference

ANSEEUW, B., MARSHALL, B.A., & TERRYN, Y. 2009. The New Zealand chitons *Ischnochiton luteoroseus* Suter, 1907 and *Ischnochiton granulifer* Thiele, 1909 (Mollusca: Polyplacophora). *Molluscan Research* 29(3) 147-154.

Being Put-Upon

IAN TOWNSEND

At times we all will have seen the eggs of *Alcithoe arabica* plastered on to other shells. Sometimes the victim is so small to be severely handicapped! It would be interesting to compile a list of unwilling hosts. I suspect it would include almost every shell found on the beach. Why don't they fasten their eggs to stones that would be more stable and not get washed ashore so readily? Or perhaps they do - but beach strollers like me wouldn't see them? There's a question for those hardy types who go snorkelling!

***A. arabica* egg on small half valve of *Myadora striata*; Waikawa Beach, Levin**

After a spectacular wash-up at Waikawa Beach it was noted they had strong preference for laying eggs on small gastropods (sometimes smaller than the egg capsule itself!) and never on shells of their own species; only rarely on bivalves. According to Wilson (1994) female volutes lay their eggs in tough capsules, usually in compact egg masses. Although there are many eggs in each capsule only one develops and it consumes the others as it grows. There is no pelagic larval stage, the embryos hatching as crawling snails. Cook (2010) referring to *A. arabica*: "they … lay egg capsules on empty shells and stones".

The large pink barnacle has similar habits which must be equally debilitating for the host - and bad news for the barnacle when the whole lot comes ashore.

Large pink barnacle on *Austrofusus glans*, Kawakawa Beach, E. Auckland

References

WILSON, B. 1994. Australian Marine Shells, Vol. 2. Odyssey Publishing.

COOK, S. de C. (ed.). 2010. NZ Coastal Marine invertebrates, Vol. 1. Canterbury University Press.

Good Shell Collecting Locations

by Jenny Raven

The recently published book *New Zealand Seashells Visual Guide* by Jenny Raven and Selwyn Bracegirdle contains a map on which locations for finding washed up shells are highlighted. Whilst a visit to these locations is must for the beginner, knowing exactly where and how to access them is useful. Visiting the wrong end of say, Taupiri Bay, could well result in no shell finds at all.

Location	Access and Shell Details
Auckland (Kawau Bay): The Sandspit & Brick Bay	Shell sand. Easy access.
Auckland: Wenderholm	Easy access onto this sandy beach though the Regional Park.
Bay of Islands: Bland Bay	The best area is at the far right hand end of the main sandy beach & around the base of solitary rocks at the sea edge at low tide in front of this; also look on the gravel beaches which start about two beaches south of here round to where the sea meets the cliffs at low tide. The tide pools at this point are worth checking for hermit crabbed shells. There is easy access onto the main beach, with rocks to clamber over between the gravel beaches.
Bay of Islands: Little Taupiri Bay	This is the small bay on the north side of the bay signposted "Taupiri Bay" on the road. Contains good shell sand & some larger material on the beach & among the rocks. Small scramble down bank from road. If you're on a beach with no shells you're on the wrong one.
Bay of Islands: Urupukapuka Island	Catch the tourist boat from Russell or Paihia. The main beach by the ferry landing has shell sand & the adjoining beaches are also worth checking. Easy access onto main beach; others require hilltop climb & walking. Note tourist boats usually only spend extended time on the Island during summer months.
Bay of Islands: Waitangi	The areas behind & beside the boat club & the Waitangi Hotel contain shell sand. Easy access beside the boat club.
Bay of Plenty (Tauranga): The Mount	Shell wash-ups abound around the Mount; also check the beginning of the main ocean beach. Reasonably easy access.
Bay of Plenty (Whakatane): Ohope Beach	The best area is at the northern end of the beach; also look for shells in the rock pools here at low tide. Easy access.
Bay of Plenty: Waihi Beach	The best area is at the northern end of the sandy beach. Easy access.
Chatham Island: Owenga	Abundant shells from where the road from Waitangi meets the sea to the Owenga fish factory. Easy access at the first road bridge.
Chatham Island: Taupeka Point	Best access is from the Kaingaroa side of the Point. There is no road sign – walk through at the narrowest point through from road. The Point contains abundant shell drift & shell sand. Allow some hours for walking & collecting.
Dunedin: Aramoana	Each side of the breakwater could be worth a check.
East Cape: Te Araroa - East Cape Road	The best area is in front of the off road parking after traversing a narrow portion after the first point out of Te Araroa. Easy access. Mainly small material; also check the reef channels before the lighthouse for hermit crabbed shells particularly where the beach meets the rocks.

Location	Access and Shell Details
Far North: Kaimaumau	Drive until the vehicle track ends in a carpark by Rangaunu Harbour. It is an easy, but isolated, walk of about 30 minutes from there alongside the harbour to the south end of East Beach. The shells are best at this end of the beach.
Far North: Rarawa Beach / Paxton Point	Easy access onto Rarawa Beach. Paxton Point is at the northern end of Rarawa with plenty of shells in the centre and possibly the rock pools but it involves some rock climbing to access. Worth checking Great Exhibition Bay on the northern side of the Point as far as the first stream mouth. Can be isolated.
Far North: Spirits Bay	Look in the shell sand against the base of the Island where the rock crossing from the beach joins the Island. Requires low tide to cross to the Island. There may be some wash-ups on the main beach by the Island. Easy access onto the beach.
Far North: Tokerau Beach	The best area is the northern end of the long sandy beach. Easy access.
Kaikoura:	The beaches around Kaikoura could be worth a check. Low tide needed to access rock pools that are famed for limpets.
Mahia: Auroa Point	Comprises two separate areas of off road parking past the boat harbour but prior to the road junction inland to Portland Island. Fishermen frequently fish off the rocks at the Point. Contains abundant shell sand & some larger shells. Easy access.
Mahia: Opoutama Beach	It is best at each end of the long sandy beach. Easy access.
Mahia: Oraka Beach	Look for wash-ups from the carpark to the low tide reefs. There may also be shells in the reef gutters/ pools. Easy access.
Marlborough: Marfells Beach	The best area is at Mussel Point (about 30 minute walk out to the Point at the southern end of the beach). The Point requires low tide access. It is also worth checking the area around the stream on the north side of the camp amenities.
Raglan: Whale Bay	Walk & rock scramble for about 30 minutes from the carpark over rocks at low tide to the small bay. Shell sand.
Southland: Riverton, Whakapatu	Around Howell's Point is best for wash-ups including the beach over the dunes at the road end. Also check Whakapatu Beach past Colac Bay off SH 99. Easy access.
Southland: Waipapa Point	The area on the south (right hand) side of the lighthouse contains shell sand and some larger material. It's worth a walk along this beach. Easy access; maybe seals.
Stewart Island: Horseshoe Bay and Maori Beach	Sandy beaches – best at each end. There is easy access from the road onto Horseshoe Bay. Maori Beach requires a water taxi or a walk requiring reasonable fitness, of about one and a half hours from the end of the road.
Wanganui: Castlecliff fossils	Abundant Tertiary (Pleistocene) fossils well preserved in cliffs starting at the end of the road at the northern end of Castlecliff Beach though to Kai Iwi; particularly at "the Buttress" (approx.½ hour walk from road end) or "the Pinnacles" (pillar shaped rock formations about 1hour walk from the road end). The access from Kai Iwi requires low tide, a calm sea and care.
Wellington (Kapiti Coast): Raumati/Paraparaumu and Waikanae Beaches	The whole length of the sandy coastline from Raumati (McKays Crossing) to the stream north of Waikanae Beach shops, may have shells. It's best around the river mouths but note the marine reserve at the Waikanae River mouth. Easy access. Waikawa Beach further north around the river mouth is also useful.
Wellington: Lyall Bay	The best area is from the south end of the beach behind the houses to the park at Arthur's Nose. Easy access.

A Club Within a Club

by Kris Woods

I'd been a member of the Wellington Shell Club for a few years before I discovered there was a club within our club. Known as the Nautilus Club, one can only become a member if one finds a paper nautilus, that is, an *Argonauta argo* or *Argonauta nodosa*. When Bill Shortt from Mahia was in the Wellington Shell Club, he became known as the Nautilus King. A title truly deserved, along with his admittance into the Nautilus Club as, in 2006, Bill had collected over 400 paper nautilus in a six year period. A staggering number! Bill's article on his hunt for paper nautilus, in the 2006 volume of *Cookia*, provides an informative insight into these shell species. I am confident Bill will retain his title for many years to come.

***Argonauta nodosa* Lightfoot 1786 - 135 mm Makara**

It took me twenty years to become a member of the Nautilus Club. The phrases "better late than never" and "persistence pays" spring to mind. In April 2011, Roger and I were on our way to the East Cape and had stopped off for a quick shell collect on Opoutama Beach, Mahia Peninsula. It is well known in the shelling fraternity that *Argonauta* species can be found at Opoutama, so Roger and I have searched this beach for years.

So there I was, earnestly collecting, when I found an *Argonauta argo* amongst driftwood, quite high up on the beach. It wasn't in perfect condition but to find one, in any condition, is an achievement, as many shell club members will tell you. Another member for the Nautilus Club! The fact that it was an *A. argo* made it even more of an achievement as this species is less common than *A. nodosa* and in Bill Shortt's experience, the appearances of *A. argo* in northern Hawkes Bay are more erratic than *A. nodosa.*

We continued with our trip to the East Cape. Ten minutes north of Gisborne we stopped at Tatapouri Beach for an even quicker collect. I had just descended a set of steps and was about to plant foot in the sand, when waiting at the bottom was a near perfect and decent-sized *A. argo*. It was just sheer luck that I didn't smash it underfoot. As with the previous *argo*, it was high up on the beach. That was not a bad effort, finding two specimens on one shelling trip.

We returned to Mahia at Easter 2012 and I found another *A. argo* on Opoutama Beach. When visiting Cath and Bill Shortt later that afternoon, I produced the *argo*. True to form, this excited Bill, so much so that he said he would hopefully go nautilus hunting at Blacks Beach just south of Mahia, and where he has found many *A. argo* and *A. nodosa,* after we left . As Roger and I passed Blacks Beach after leaving the Shortts, we thought about stopping but decided not to. Bill emailed me recently to say he went to Blacks Beach the day after we left and he found a perfect *Argonauta argo*. I tell myself that it wouldn't have been there the day we passed, it surely would have washed up the day Bill looked!!!

Shell Club members have found *Argonauta nodosa* in and around Wellington, including such locations as Moa Point, Seatoun and Paraparaumu. I have a largish, very good *Argonauta nodosa* from Makara in my collection.

***A. argo* Linnaeus, 1758 (from back): 125 mm Tatapouri, 60 mm Opoutama, 70 mm Opoutama**

Best Find—Only a Block from the Sea

by Jill Burnet and Ian Townsend

Before and after—a handful of Eastbourne finds with addition of TLC (right)

Full marks to Kerry Walton for his organisation of our club outing on Easter Saturday, 7 April 2012. Everything was spot on: not just one but two good low tides four hours apart, and, an even greater achievement, such wonderful weather that anyone would have been glad to wander along a beach in the brilliant sunshine – which is just what eight shell club members did. Pat Lakeman and Graham Aamodt gave me a ride out to Eastbourne where we found Kerry already on the wharf. Fred and Lesley Keil, and then Leita Chrystall and Ian Townsend joined us, and we all set off along the beach to the south, poking through all the sponges along the drift line looking for ones with *Chlamys* in them – I think we all found an example. I was quite pleased with a single valve of *Panopea zelandica*, and Pat was lucky enough to find a complete *Zenatia acinaces*, which she showed us all at lunch time. Lunch was a feast of pizza and chips at a little restaurant only a block from the beach and Kerry voted this the best find of the day. After lunch our group split up – Pat and Graham drove off into the blue, Ian and Leita voted to stay in the Eastbourne area (more from them later), and the rest of us piled into Kerry's car for the trip to Green Point where Selwyn Bracegirdle was waiting for us in the car park. Here was another sun drenched beach, though the walk was a bit more of a scramble, down the hillside and over rocky outcrops. At Green Point of course, we were all keeping our eyes peeled for that drab, inconspicuous, elusive shell, *Mitra carbonaria*. Kerry did best in finding two of these, but Lesley is to be commended for finding a broken one when she didn't know what she was looking for. Fred picked up a *Calliostoma tigris* which would have been lovely if it had been complete, and my best find was *Tucetona laticostata*, a complete pair nicely patterned. And now – back to Eastbourne:

After a very pleasant club-sponsored lunch with the others at The Lifeboat Tavern, Leita and Ian decided to continue shelling at Eastbourne while the rest of the party moved on to catch a second low tide at Green Point. This part of the story is continued by Ian. We drove on down the road to where it appeared to enter private property. There we went out to another shingle beach which proved to be much richer in specimens than where we had been in the morning. Perhaps it was easier collecting because there were several distinct rows of tide-wash to examine. There were greater quantities of seaweed and sponges, several of which were hiding pairs of *Talochlamys zelandiae.* There was also a good series of *Maoricolpus roseus* and we also collected eight specimens of *Cantharidus opalus*, most in good condition, one even with operculum. There was also a specimen of *C. purpureus*. We did not attempt to note a complete list of shell species but we finished up with 16 gastropods and 8 bivalves in our collection.

We were intrigued by the variety of different sponges, so we collected these with the hope of identifying them using a newly acquired book "New Zealand Coastal Invertebrates" by Steve de C. Cook. (Yeah right!) I thought a chapter of 77 pages illustrating most species in colour would be easy, but without getting into the minefield of studying spicules, I finished up with mainly tentative identifications. The ones with *Talochlamys zelandiae* in them were okay, and we had the shells to confirm the identification of *Dactylia palmata*. Others were possibly *Haliclona heterofibrosa* and/or *Mycale hentscheli* and *Strongylacidon conulosa* which are

all recorded from the Wellington area. There were others that didn't seem to fit any of the illustrations. The problem was trying to compare dead sun-bleached specimens with photos of living examples – tricky! And it seems that they can alter their overall shape somewhat depending on whether they are growing free standing on a shell or smothering an undulating surface. I'll stick to shells!

In conclusion, we would like to say thanks to Kerry for organising a really good day. The weather was perfect too – sunny and calm. How did you arrange that!

What we found – Jill tried to pick up an example of everything, but a lot of the shells were beach worn and most of the bivalves were only single valves. And a final shell, not listed – at Eastbourne, Ian pressed a shell on Jill with great mystery and secrecy. It proved to be that well known, notorious even, introduced and invasive pulmonate, *Cryptomphalus aspersus* (formerly *Helix aspersa)*.

From Green Point, of the 35 species collected (25 gastropods, 10 bivalves), 3 bivalve species had not been recorded in *The Wellington Shell Club Lists* (*Cookia*, Vol. 14, 2003): *Limnoperna pulex*, *Atrina zelandica* and *Ostrea chilensis*.

From the 39 species collected at Eastbourne (14 gastropods, 25 bivalves), 26 had been recorded in the lists, or in the 2008 update to the lists (*Cookia,* Vol. 20, p. 12, 2008) in the locality in which we were collecting (Eastbourne to Burdan's Gate). A further 10 species had been recorded previously from the adjacent locality to the south (Burdan's Gate to Pencarrow), but are new records for Eastbourne to Burdan's Gate. These were:

BIVALVIA

Musculus impactus
Paphies australis
Paphies subtriangulata
Pseudarcopagia disculus
Dosina mactracea
Protothaca crassicosta

GASTROPODA

Cantharidus purpureus
Diloma aethiops
Cookia sulcata
Haustrum lacunosum

Three species had not been recorded from the Eastbourne to Pencarrow area previously: *Modiolus areolatus*, *Peronaea gaimardi* and *Maoricolpus roseus*.

A pic to drool over: raw material from 200 m Snares Bank - how many mollusc species are shown here? (Answer on page 27)

Large Limpets at Kaikoura

by Beverley Elliott

Cellana denticulata Kaikoura. Several specimens are 80 to 82 mm. Shirley Rennie of Rangiora found a 84mm one.
On 3 April 2012 I was so pleased to have a visit from Mary Agnes Wotton – unfortunately a very short one, but we were able to gather a few Montfortula chathamensis. While hunting for these, I found the largest Notoacmea parviconoidea I have seen – which I gave to Mary Agnes because of her special interest in limpets. She advises it is 14.65mm and the current world record size for the species. And this gave me the idea of measuring some of Kaikoura's largest limpets for a brief article.
Scutus breviculus Kaikoura up to 80mm
Cellana strigilis redimiculum Kaikoura 60 to 70 mm
Cellana ornata Kaikoura 2 of 50mm, and the largest 55mm.
The rocky points of Kaikoura peninsula are an ideal habitat for limpets, some of which grow quite a bit larger than usual, and some of the largest ones are still in good condition.
R. inconspicua Kaikoura to 20mm.
Cellana stellifera Kaikoura 50 to 55 mm
Notoacmea pileopsis Kaikoura up to 30mm
N. scopulina Kaikoura to 20mm
Patelloida corticata Kaikoura up to 34 mm
A number of smaller species live here too, such as Asteracmea suteri, Atalacmea fragilis, Notoacmea daedala, Montfortula chathamensis, Tugali elegans, Tugali suteri, Siphonaria propria and Trimusculus conicus.
Benhamina obliquata Kaikoura up to 66 mm
Cellana radians Kaikoura. Up to 60mm, with one whopper of 67mm
Siphonaria australis Kaikoura up to 33mm
Cellana flava Kaikoura. Several specimens are over 70mm, the largest 77mm.

Background photo:
"Montfortula pool, Kaikoura" - Mary Agnes Wotton

Mahia Memories and Shell Sand

by Ian Townsend

What an idyllic way to spend a Saturday morning – on a sunny porch sorting shell-sand. My eyes were glued to the job, but my ears were telling me about other things. Lambs bleating in the paddock, tuis snorting from the trees occasionally interrupted by an outburst of song from a bellbird determined to defend its territory. Then the heavy wing-beat of a native pigeon above the background twitter of wax-eyes and fantails …. but what about the shells, I hear you say.

Photo credit: Leita Chrystall

We had just visited Mahia Peninsula in August 2011 and found a likely spot at Auroa Point. But we had competition! There was a lady fossicking along the drift-line and popping things in a jar. Of course I had to find out if she was a serious collector. Oh, yes she was! This was how I met Margaret Fraser from the Shell Club. Meanwhile my partner had met up with her husband David who likewise, wanted to know if she was a serious collector! Leita stood up and said, "Well, I belong to the Wellington Shell Club" and he replied, "So do I!". Leita and I had found four *Trivia merces* between us, but this was insignificant compared to Margaret's seven. David had found only one at that stage, but he persisted well into the afternoon to increase that number. I found a tiny gastropod that none of us had seen before, and to round off the day, Margaret found a *Philippia lutea*. We all became immediate friends, with this kind couple inviting us to a lovely evening meal and insisting that we stay the night. Shell Club friendship at its very best! It was a great opportunity to see their collection. They have specialised in shells from Mahia and have a great collection of *Argonauta* shells that they have doubled in beauty by the clever arrangement of a mirror. We found we had many similar interests including NZ orchids, Forest & Bird and photography so we had lots to talk about long into the evening.

Next morning we all went over the road to have a look at Mahanga Beach. There had been a small wash-up but we did not find a *Semicassis thompsoni* as Jenny Raven did a week later! When we left we were given a cauliflower and a huge carrot the size of a large parsnip, that took us three meals to demolish, AND a *Philippia lutea*!

And so, after other visits in Hawkes Bay we eventually returned home and got round to sorting the aforementioned shell sand. I like to initially sort the better shells into a small dish using magnifiers in a head-band. Then these are further checked under a low-power dissecting microscope and damaged or worn specimens discarded. To species-sort I find it useful to spread the sample on corrugated cardboard, using fine watchmakers forceps to separate species into the hollows. I had only a small sample from Mahia - about 200 grams, but it had enough "goodies" to make it interesting.

The unknown shell (height 6mm) appears to be a species of *Liracraea* but more about that later. Its identity will need to be confirmed. Other small shells of interest were

Turbonilla zealandica, (Pyramidellidae); *Fossarina rimata*, (Trochidae); *Prolixodens infracolor*, *Synthopsis caelata*, (Cerithiopsidae); *Dentimargo cairoma*, *Serrata fasciata*, (Marginellidae); *Eatoniella limbata*, *E. lutea*, (Eatoniellidae); and amongst the bivalves, halves of *Powellina brookesi* and *Myllita stowei*. There are also a lot more really tiny ones like Rissoidae and Anabathridae that will keep me amused for a long time yet.

For those having problems deciding whether a shell is mature or just a young one: check the size of the protoconch. If it is less than a quarter the size of the whole shell, then the chances are the specimen is reasonably mature.

Reminiscing over past trips, my first shelling trip to Mahia was with Jenny in August 1998 and recorded in

Cookia of that year. I visited the area again in June 1999 (again with my wife, Heather and Jenny). On that trip some of our best collecting was from the reefs at Oraka Beach, but our stay was only for a couple of nights because we were heading on to East Cape. I also made visits in December 2000, April 2001, March 2004 and August 2010, but these were either brief, ie, en route elsewhere or with other priorities.

The quality of the shells collected on this last trip was generally poor compared with specimens taken in 1998. Many of them had had a good churning in the tides and were not worth keeping. Deceptively, they looked good when wet.

However the one little treasure of *L. cf. odhneri* but NOT, was becoming more intriguing. (Perhaps I should sub-title this section WHO'D BE A TAXONOMIST!). I went right back to basics, checking Dell, 1956; Powell, 1942; Suter, 1912 & 1915 and Hutton, 1885. And there, in Suter, I found it! Hutton had described *Mangilia dictyota* in 1885, Suter described it in 1912 and illustrated it in 1915. Powell (1942) referred to it, but it has been dropped from current literature because it is a FOSSIL! Well, maybe, but Suter appears to be ambiguous. He describes its colour as "whitish or light brown; sometimes a brown band appears on the base of the penultimate whorl, and is continued on the body whorl; inner lip mostly dark violet or brown, especially the lower part of it." This gives no hint of it being a fossil and I'm sure he is referring to a recent specimen here, although he describes the type as Fossil in Pliocene. He also states under Habitat various places around New Zealand where it has been dredged from Great Barrier Island to Foveaux Strait and Chatham Islands; also Lyall Bay. Surely these can't be fossils. It must, as many other species, exist as fossil and live forms. Perhaps the name should be brought back into current literature for recent Mollusca. Just as a final check, I dusted off a 126 year old copy of the 1885 Transactions to check Hutton's original

description and everything fell apart. Not the book, but my previous thoughts! Hutton's illustration was a fossil and not remotely like Suter's drawing! Apparently Suter, having decided the live dredged specimens were the same as the fossil, used one of them on which to base his description and drawing. Where to now?

I showed enlarged photographs of each specimen at the September 2011 meeting of the Shell Club for discussion. Jenny thought they were the same (she had bigger fish to fry with the announcement of her find of *Semicassis thompsoni*.) But I got a more sympathetic response from Mary Agnes, who pointed out that they were not only different in proportion but also the riblets became weaker on the sutural slope in one (*L. epentroma?*) but are continuous to the suture in the other with more

pronounced nodules where the axials and spiral cords intersect (*L. odhneri*). The shell proportions also fit this possibility. However *Liracraea epentroma* and its subspecies are only recorded from Otago south. Do we have *L. odhneri odhneri* (there is another subspecies off Otago and Chathams) and *L. epentroma epentroma* both at Mahia? Perhaps the systematics is a bit suspect? After all, look at the different forms of *Alcithoe arabica*. Maybe Jenny is right in saying "They are all the same".

Of course the next step is to consult the professional conchologists in our Club. I had not done this so far because I wanted to record my own thoughts on the subject. As you can see, I was getting hopelessly confused, so was looking forward to consulting our Bruce Marshall and Alan Beu (for fossil relationships). This may be a continuing saga! It is .....

The last word! Alan said the group is in need of revision and Powell, because of lack of material, described too many "species". Bruce said that the two images of the two specimens that I showed him are the same species - *L. odhneri* - so there you have it.

References

DELL, R.K. 1956 The Archibenthal Mollusca of New Zealand. *Dominion Museum Bulletin* 18, 1-235. [p. 140].

HUTTON, F.W. 1885 Descriptions of new Tertiary shells. *Transactions and Proceedings of the New Zealand Institute* xvii, 313-332. [p. 316, pl. 18].

POWELL, A.W.B. 1942 The Recent and Fossil Mollusca of the Family Turridae. *Bulletin of the Auckland Institute and Museum* 2, 1-188. [pp. 148-151, pl. 5].

POWELL, A.W.B. 1979 New Zealand Mollusca, Marine Land and Freshwater Shells 1-500. [p. 241, pl. 46]. Collins.

RAVEN, J. & BRACEGIRDLE, S. 2010 New Zealand Seashells Visual Guide 1-76. [pp. 40-41]. Creatus Design.

SUTER, H. 1913 Manual of the New Zealand Mollusca 1-1120. [pp. 497-499] and Atlas of Plates 1-72. [pl. 21].

Cookia Contributions

Members and other readers are invited to submit contributions (handwritten, typed or electronic). These should be in the Editors' hands before the end of May for inclusion in that year's issue (look at a recent issue to see the style to follow).

Please use (unless there is a stated reason not to do so given in your manuscript) the molluscan names in the Checklist of the Recent Mollusca recorded from the New Zealand exclusive Economic Zone by Spencer, H.G., Willan R.C., Marshall B.A., and Murray T.J., which can be viewed at

http://www.molluscs.otago.ac.nz/index.html

Authors should also save the editors work by checking the spelling of these names very carefully. Following standard practice, in long lists of species the species names should NOT be listed in alphabetical order but in systematic sequence (with Family headings) as in the 'Checklist'. Bruce Marshall, at the Museum of New Zealand Te Papa Tongarewa, is very willing to check identifications or species names for any members who would like his help. Please take advantage of this generous offer. Also note: the Mollusca Section library at the Museum of New Zealand Te Papa Tongarewa is the most comprehensive collection of the world literature on Mollusca in the country.

The Editors are always happy to discuss any proposed contribution with members.

Answer to question on page 23: 11 mollusc and 1 brachiopod species.

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Wellington Shell Club Publications

Cookia is the journal of the Wellington Shell Club and is published annually, containing articles and smaller items of interest on shells, shell collecting, and molluscs as well as other related marine topics.

Cookia was first published in 1976; prior to this the Club published a *Circular*, then a *Bulletin*, as well as occasional *Study Notes* on various families of mollusca.

PUBLICATIONS TO DATE

1956-1965 *Circular* 1 to 21

1967-1975 *Bulletin* 1 to 36

1976-1977 *Cookia* Volume 1, Nos 1, 2, 3

1977-1978 *Cookia* Volume 2, Nos 1, 2, 3

1979-1980 *Cookia* Volume 3, Nos 1, 2, 3

1980-1981 *Cookia* Volume 4, Nos 1, 2, 3

1982-1984 *Cookia* Volume 5, Nos 1, 2, 3, 4

1985-1992 *Cookia* Volume 6, Nos 1, 2, 3, 4

1993-1996 *Cookia* Volume 7, Nos 1, 2, 3, 4 [Index]

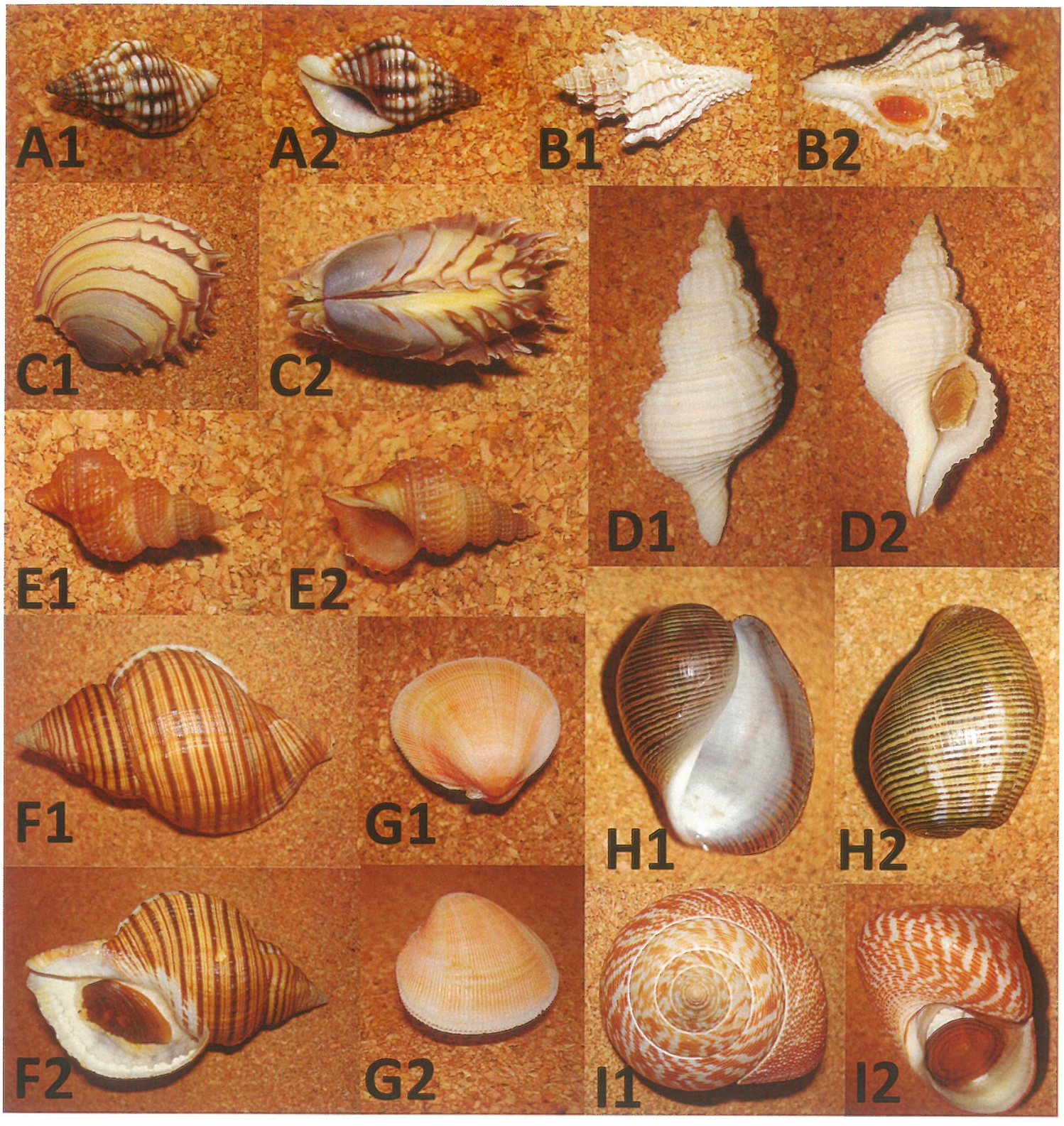
1997-2011 *Cookia* Volumes 8 - 23.

Cookia Volume 7, No 4, is an index of all articles in the Club publications to 1996.

Cookia Volume 14 is The Shell Lists issue.

BACK ISSUES

Back issues of *Cookia* are available at cost plus postage; individual articles, and copies of the Bulletins, Circulars and Study Notes can be ordered at cost plus postage, from Jill Burnet, 84 Brougham Street, Mt Victoria, Wellington 6011 New Zealand; or see our homepage at **www.wellingtonshellclub.org.nz**



The solution to the competition on the inside-front cover:

A: *Buccinulum colensoi*, 15mm, rock platforms NE of East Cape Lighthouse. B: *Zeatrophon ambiguus*, 21mm, on *Zostera* mudflats at Mistletoe Bay, Marlborough Sounds. C: *Circomphalus yatei*, 34mm, Paraparaumu Beach, S of the Waikanae River Mouth. D: *Glaphyrina caudata*, 48mm, dredged in 90m E of Otago Heads. E: *Trichosirius inornatus*, 15mm, dredged in 16m off Kaiteriteri in Tasman Bay. F: *Argobuccinum pustulosum*, 74mm, Marfells Beach. G: *Pratulum pulchellum*, 26mm, in Blue Cod gut taken in 20m off Mint Cove, Marlborough Sounds. H: *Hydatina physis*, 49mm, on mud flats at Paua, Parengarenga Harbour.
I: *Calliostoma tigris*, 63mm, taken by diver in 5m off Chetwood Is in Tasman Bay.